

Muschalla, B. (2018). Work-anxiety rather than cognitive performance contributes to work ability decisions in patients with mental disorders. *Journal of Occupational and Environmental Medicine*, 60, 1042-1048.

Work-anxiety rather than cognitive performance contributes to work ability decisions in patients with mental disorders

Running title: work anxiety and sick leave

Author: Prof. Dr. Beate Muschalla

Affiliation: Technische Universität Braunschweig, Department of Psychology,
Germany

Original Article for publication in **Journal of Occupational and Environmental
Medicine**

4542 words (manuscript text without abstract, references, tables). 2 tables.

Conflict of Interest: The author declares that she has no conflict of interest.

Funding: This investigation was not financially supported.

Address for correspondence:

Prof. Dr. Beate Muschalla

Technische Universität Braunschweig, Department of Psychology,
Humboldtstraße 33, 38106 Braunschweig, Germany

Email: beate.muschalla@gmx.de

ORCID-ID: 0000-0001-5285-6618

Abstract

Background: Mental work-ability decisions must be based on information on person's symptom load, cognitive performance and workplace conditions. This investigation explores in which way these factors contribute to work ability in persons with common mental disorders CMD).

Methods: 1570 CMD-patients underwent multimodal medical diagnostic. Participants filled in questionnaires on work-phobic-anxiety and general mental symptom load. They were also investigated concerning their cognitive performance. Sick leave duration, workplace problems and subjective work-ability were assessed. Physicians' decision on the persons' work-ability (fit or unfit for work) was given five weeks later.

Results: Negative work-ability perception, long previous sick leave duration and high work phobic anxiety explained unfitness for work, whereas general symptom load and general cognitive performance did not.

Conclusion: Work-directed diagnostics and interventions must address work-phobic anxiety and subjective work ability perception.

Keywords

Work anxiety, absenteeism, sick leave, work ability, return to work, cognitive performance

Work-anxiety rather than cognitive performance contributes to work ability decisions in patients with mental disorders

Introduction

Work (dis)ability and absenteeism is a core topic in occupational health research and practice [1-5]. Common mental health problems, e.g. anxiety disorders, affective disorders or adjustment disorders, are associated with problems at the workplace and strongly affect work ability [4,6-9]. Persons with mental health problems may be sent into work-directed trainings, such as rehabilitation clinics, or - in the occupational health setting - psychosomatic consultation services [3]. The aim is to evaluate and restore work ability of persons with mental disorders.

The evaluation of work ability is a complex process in which various information must be judged and integrated [10]. Work ability is not simply inferable from the mental and physical health status as such. Work ability needs to be judged in consideration of the concrete work situation, the health condition, and the prognosis of the health condition [7]. In the sense of the biopsychosocial model of health offered by the *International Classification of Functioning, Disability and Health*, ICF [11,1], impairment is not situated in the person, but must be seen as an interaction of *body structures, symptoms and activities* on the one hand and *contextual factors* on the other hand.

Accordingly, work ability in case of mental disorders is dependent on both: workplace factors and personal psychological factors. First, *conditions of the workplace* must be explored. There are different aspects of work which may mean a problem for persons

with mental health issues [12,13]. Often reported *work problems* of persons with mental disorders are quantitative overload, i.e. too much work (in 30-76% of cases [14]), or structural problems (21-29%), or mobbing and conflicts (14-29%). Also the work content and thus qualitative overload (12-47%) may be a problem. Conditions like high job demands or low social support may contribute to cognitive and behavioural problems [15], may disturb fulfilling the work tasks and therefore contribute to work ability deficits.

In case a person is unemployed, general work ability is of interest. General work ability of a person has to be judged concerning the general labour market, i.e. concerns the question whether the person can go to the job center and apply for a new job, and may start any job on the general labour market fitting his qualification. Thus, two types of work ability may be considered, *workplace-related work ability* and *general work ability*. For example, a person with a chronic dysthymia may be unfit for work at her present workplace: a boutique where she has to smile and be friendly talking to clients all the day. However, with the same chronic dysthymia, she can be fit for work for a different job on the general labour market which does not require a good mood, such as in a single office place.

Secondly, a number of *person factors*, especially the (mental) health status must be assessed. Unfitness for work can only be certified in case the person has a health problem and this health problem conflicts with the work demands and work conditions [7,16]. In mental disorders, the health problem is on the one hand expressed by *mental symptom load*. However, symptom load as such is not narrowly related with work ability [17,18]. Therefore, additional personal health dimensions must be considered. A key aspect for work ability is the question whether a person can (despite an illness) perform in certain tasks. For mental work ability decision the psychological capacities and cognitive performance constitute an important aspect beside the symptom dimension [7,19]. Cognitive performance has been found a key aspect in

subjective work ability [20] (Ihle et al., 2015). Such cognitive performance (as operationalized in intelligence test) results are moderately related with general work ability in the general non-clinical workforce [21-23] (Salgado et al., 2003; Schmidt & Hunter 2004; Richardson & Norgate, 2015). Intelligence tests are used in many psychotherapy clinics in routine diagnostic at intake in order to test the patient's general cognitive performance. Physicians and diagnosticians thereby get information about the patient's performance in such a defined and standardized achievement situation. Conducting cognitive tests also means a kind of exposition in sensu concerning cognitive work tasks. The term cognitive performance in this present research includes the typical aspects which are topic in many general intelligence tests: numerical, verbal, retention and figure performance. Cognitive performance has been operationalized by similar subdimensions in earlier research [20] (Ihle et al., 2015). Given the wide variety of professions the patients come from, a cognitive test is needed which covers a wide range of cognitive performance aspects. The here chosen operationalization (see instruments section) fulfills these requirements, as it covers all the four above mentioned different aspects of cognitive performance.

Another aspect is that some mental health problems are directly work-related. A number of persons with mental disorders suffer from specific work-related anxieties or even *work phobic anxiety* [14,24]. Work-related anxiety has also been observed in different organizational samples [25-27]. As anxiety is going along with avoidance, work phobic anxiety is often coming along with sick leave [28]. Thus work phobic anxiety is, beside general mental symptom load, an important aspect in work ability decision processes for persons with mental health problems. Work phobic anxiety has been conceptualized and validated in several independent studies over the last 15 years, including differential diagnostic and intervention [24,30,41]. The question is to which amount work phobic anxiety contributes to variance in sick leave decisions. Therefore, beside cognitive performance (which is an independent aspect

potentially associated with work ability), work phobic anxiety must be included in analysis on work ability decisions.

Thus, in socio-medical practice (i.e. for the decision whether a person is fit or unfit for work) information on workplace conditions and person's personal condition must be gained. This is usually done via both the person's subjective as well as observer's (e.g. physician's) perspective. The person reports his/her present symptom load. The therapist/physician must explore the illness history, treatment or earlier sick leave durations, and the work situation, including specific work-related problems, and work-related symptom load, especially work phobic anxiety [14,28]. Furthermore, observational data on the person's work behaviour is useful, in order to complete the information basis for work ability decision. For decisions on mental work ability, especially the person's performance in cognitive tasks may be of relevance. For observing cognitive performance, standardized cognitive tests can be done, covering tasks on numerical, verbal, figural performance, or retention. Socio-medical decision on work ability must also consider that the level of work ability might be different in dependence of different contexts: *work ability at a specific workplace* may be different than *general work ability*, i.e. whether a person is fit for work to carry out a job on the general labour market.

Research on predictors of work ability until now has focused on symptom load, work ability self-efficacy, and other personal variables such as sex and age, personality and coping, type of illness, history of previous sickness absence [16,17,29]. What is until now unknown is

- a) in which way observable *cognitive performance* contributes to explanation of physicians' work ability decision, and
- b) which role plays *work phobic anxiety*, a work-specific panic-like reaction which is specifically associated with work avoidance and thus sick leave [28,30].

These aspects additional to the established work ability predictors (sick leave duration, global subjective work ability expectation) seek for clarification within the complex explanation of work ability decision. Results will give hints whether these additional aspects must be considered to influence work ability decision in patients with mental disorders.

Questions of research

Work ability is not lying in the person herself, but must be understood as an interaction between workplace and person [7,16]. Thus the before mentioned personal and work conditions may have an impact on the medical decision of a person's mental work ability (fit or unfit for work). Until now it is unclear which of these aspects account for medical decisions on mental work ability in occupational health practice. Recent research suggested including work environment factors or competency/performance aspects in work ability research [16,31]. Thus, the first (and main) aim of this research is to investigate these personal factors and work factors concerning their predictive value on work ability decision. Thereby especially the explanative values of the introduced

a) observable aspects of cognitive performance, and

c) work phobic anxiety

are of interest.

A second – explorative - question concerns a comparison of the different work ability courses, i.e. work ability status from intake to work ability decision at discharge from inpatient treatment. Thereby an especially interesting group will be regarded: those persons who are on sick leave due to mental disorders when they come into treatment, but become discharged fit for work (SF). Do these persons have certain specific characteristics? What are the differences between these persons initially on sick leave who become discharged fit for work (SF) and

persons' initially on sick leave and discharged unfit for work (SS)? Another question concerns the difference between persons whose work ability status changes in opposite directions: FS (from fit for work at intake to sick leave/unfit for work at discharge) and SF (from sick leave at intake to fit for work at discharge) persons will be compared. The exploratory question of comparing the groups with different sick leave developments is important because it shows if the groups who become fit for work (SF) (after being unfit) are initially somehow different from those who do not become fit (SS). The research question and the analysis give hints which aspects may be of relevance (i.e. should be explored, considered in further treatment) as potential resources (e.g. fit for work status as a chance for new start and apply for a new job) or challenges (e.g. need for treatment of work phobic anxiety) when patients are initially on sick leave.

Method

Setting of recruitment

The investigation was done in a psychosomatic and psychotherapy clinic in Germany. Persons with common mental disorders like depression, anxiety or adjustment disorders are admitted here. They are often sent on initiative of health and pension insurance because their work ability is endangered or they have been on longer sick leave. They participate in the treatment program for five weeks. The routine programme consists of individual diagnostics at intake, followed by interventions of behaviour therapy, general social counselling, sport therapy and recreational therapy. As special aim is detecting and solving work-related problems and fostering vocational reintegration. Persons with work-problems are offered work-directed group therapies on conflict management, time management, or a training for applying for a new job, or individual social counselling. In some cases, a work-test can be done in a real workplace in

cooperating companies nearby. The main aim is diagnostic of and training for optimizing mental work ability. In the end of treatment, the clinic team (therapists and especially the physician) must give a decision on each person's mental work ability. Persons can be discharged either "fit for work" or "unfit for work (i.e. sick leave)"

Procedure of the investigation

Participants underwent an initial diagnostic and filled in a self-rating questionnaire on their general mental symptom load (*Symptom Checklist* SCL-90-R [32]) and work phobic anxiety (*Workplace Phobia Screening* WPS [24]) shortly after intake to the clinic. Sociodemographic information and information on the work status was assessed in a clinical intake interview (structured interview guide) by experienced social workers, and the participants underwent a cognitive test (*Intelligence Structure Analysis* ISA [33]). Work ability ratings were given by participants and therapists. Finally, by taking into consideration the before mentioned information, the physician decided about work ability: whether the person is discharged fit or unfit for work.

All procedures were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Instruments

General mental symptom load was assessed with the *Symptom Checklist* (SCL-90-R [32]). The SCL-90 is a self-rating questionnaire which covers 90 unspecific complaints on the following subscales: somatization, compulsiveness, uncertainty in social contacts, depressive tendencies, general anxiety, aggressiveness, phobic anxiety, paranoid thinking and psychoticism.

Participants give a rating of severity for each symptom on a scale from 0 (symptom not occurring) to 3 (symptom very severe).

Specific work phobic anxiety symptoms were assessed with the *Workplace Phobia Screening WPS* [24]) which covers two main dimensions: workplace-related panic and workplace avoidance. The items are rated on a Likert-scale from “0 = no agreement” to “4 = full agreement”. Retest reliability is .952 ($n = 85$), Cronbach’s alpha .957. The scale has been validated with an interview on workplace-related anxieties as criterion [24]). The WPS is given to the participants with the title „Questionnaire on workplace-related problems“, examining „situations, thoughts and feelings one can experience at the workplace“. Participants were asked to refer to their present or – in case they were presently unemployed – to their last workplace. In case they had more than one workplace, they were asked to refer to the workplace which was most important for them and had most influence on their daily life and well-being. The mean score over all the 13 items can be used as an overall score for the degree of work phobic anxiety.

For observing the cognitive performance, an intelligence test (*Intelligence Structure Analysis, ISA* [33]) was done with all persons. Given the wide variety of professions the patients come from, a cognitive test is needed which covers a wide range of cognitive performance aspects. The test is done computer-based within on average 90 minutes. It covers 177 tasks four main cognitive dimensions: verbal performance (completing sentences, finding similarities, deducing relations, form concepts), numerical performance (practical arithmetic, continuing numerical series), figural spatial performance (recognize dices, piecing together figures), and retention performance (remembering goods).

Scale scores were calculated. Such tests are often used in inpatient treatment in routine diagnostic, and give hints for the general level of cognitive performance under achievement conditions. The test delivers observational data on the person’s achievement performance (rather

than subjective achievement perception) and therefore adds important information for decision on mental work ability.

Additionally, work descriptive data were assessed within a structured vocational anamnesis examination by a social worker. In this interview, the cumulated *sick leave duration* of the person within the past 12 months was assessed, and whether s/he had applied for disability pension. It was explored whether there were *problems at work* and if yes, which kinds of problems (absence times, conflicts, qualitative or quantitative over-taxation, or structural environmental problems).

Participants and therapists were also asked for their *rating on the work ability* of the participants. First, work ability for the concrete present or last workplace is asked, and secondly, work ability for any job on the general labour market. Ratings are “2 = fit for work”, “1 = fit for work with limitations” and “0 = unfit for work” for both items.

Recommendations for aftercare, additional action for vocational rehabilitation (graded return to work) were taken from the final medical report after finished inpatient treatment.

Participants

A convenience sample of 1570 persons with different mental health problems was investigated in a German psychotherapy clinic. The average age was 47.49 years ($SD = 8.6$, range from 18 – 64 years), 68.8% were women. 90.2% of the investigated were employed as white-collar-workers at their last or present workplace. 71% had completed an apprenticeship, 2.9% with additional master qualification; 20.7% had a university diploma, and 5.2% did not have a completed professional education. 71.2% were presently employed, 25% were unemployed, 2.1% on disability pension, 0.5% were employed in protected work settings, 1.2% some were housewives/men or got widow rent.

38.9% participants had an affective disorder according to ICD-10 (F 3 [34]), 52% an anxiety disorder (F 4), 9.1% a personality disorder (F 6) and 5.3% a developmental disorder (F 8). The distribution of the participants' characteristics are typical for persons from the working population in treatment for mental disorders with a work-orientation [35-37].

Data analysis

For investigating the relative variance-explaining value of the above introduced personal and work factors for the work ability decision at discharge, a logistic regression analysis was calculated.

For comparative purposes addressing the second, explorative question of research, the persons were divided into four groups according to their sick leave course from intake to discharge from inpatient treatment: Sick leave/unfit for work before intake and sick leave/unfit for work at discharge (SS), sick leave/unfit for work before intake and fit for work at discharge (SF), fit for work at intake and sick leave/unfit for work at discharge (FS), Fit for work before intake and fit for work at discharge (FF).

Data have been analyzed with SPSS. ANOVA and χ^2 -Tests were used to investigate means differences and differences of frequencies between the four groups. All statistical tests were two-sided and the alpha-level of significance was set to be $p < .05$.

Results

Personal and work factors' contribution to work ability decision at discharge

The first question is to what degree the personal and work factors contribute to the work ability decision at discharge from inpatient treatment (Table 1). Low subjective work ability perception ($B = -375, -.718, p < .000$), as well as a long previous sick leave duration ($B = 830, p < .000$), have predictive value for the medical work ability decision “unfit”. High work phobic anxiety (WPS) was associated with a work ability decision “unfit” ($B = .321, p < .000$), whereas the general mental symptom load (SCL-90-R) was not of importance ($B = .059, p = .497$). The cognitive performance (verbal, numerical, retention performance) in the cognitive test (ISA) was not systematically associated with the physician’s work ability decision, only low scores in figural spatial tasks seemed to be associated with unfitness for work ($B = -.193, p = .036$).

[insert table 1 about here]

Comparison of groups with different work ability courses

Table 2 shows the work-related characteristics of the four groups. 40.1% of 1570 persons were FF, 15.5% were SF, 38.5% were SS, and 58.6% were FS. 28.7% of persons who had been on sick leave at intake were judged fit for work at discharge. Additionally, in 29.4% of those discharged unfit for work (SS, FS), graded return¹ to work has been initiated. Thus in sum 50.7% ($n = 430$) of those who had been on sick leave at intake were fit for work or put on graded return to work at discharge. SS persons reported most often (25% of cases) to have problems at work due to sick leave absence.

Comparing SS and SF persons, SS persons were in most cases employed (72.9%), whereas only half of the SF persons were employed (49.4%). From 441 employed SS persons, 390 (88.4%) reported workplace problems, and from 119 employed SF persons 89 (74.8%)

¹ Persons who were discharged with graded return to work are in fact only partly able to work, and they have to be discharged as “on sick leave”. They are thus put into the groups who were discharged still sick (SS, FS).

reported workplace problems. In SS as well as SF persons the types of workplace problems were in a similar frequency ranking: quantitative overload, mobbing or conflicts, qualitative overload, structural problems, and sickness absence. SF persons got most often (in 49.4% of cases) recommendations for aftercare. Graded return to work can only be recommended for persons who are on sick leave. In about 30% of the SS persons graded return to work was initiated. SF persons were a bit younger than SS persons. SF persons reported higher subjective work ability, lower work phobic anxiety (WPS), lower general mental symptom load (SCL-90-R), slightly shorter past sick leave duration, and they showed better cognitive performance (ISA). Therapists also rated SF persons' work ability more optimistic than the SS persons' work ability. Summarized, SF persons showed consistently over personal and workplace aspects a better status as compared to the SS persons.

An interesting finding is that SF and FS persons have similar levels of work phobic anxiety (WPS) and cognitive performance (ISA). But, they appear to differ in specific aspects: SF persons report lower levels of general mental symptom load (SCL-90-R), and they show higher self- and therapist-rated work ability. FS have about the same level of general mental symptom load, cognitive performance and subjective work ability perception like SS, but therapists give even worse rating of FS persons' work ability.

The specific work ability for the present/last workplace is perceived lower than the general work ability.

[insert table 2 about here]

Discussion

Personal and work factors' contribution to work ability decision at discharge

Findings from this investigation replicate the meaning of the past duration of sick leave and the subjective work ability perception as significant predictors of work ability [17,38,39].

As the medical decision on mental work ability cannot be derived alone from symptom load, sick leave history, or work ability perception, our investigation has gone beyond and questioned whether additional observational information – i.e. on the persons' *cognitive performance level* - contribute to explanation of work ability decision, and whether specific *work phobic anxiety* [7] played a role. Results show that general mental symptom load and the cognitive performance are not predictive. Work phobic anxiety however is relevant in explaining work ability decision: the higher work phobic anxiety, the higher the probability that the person is judged unfit for work. This fits to findings from other study samples which found a specific relation between work phobic anxiety and sick leave [14,24]. The findings from the present investigation show that an influence of work phobic anxiety [40] must be considered in the process of work ability decision. Research has shown that specific work-directed diagnostic and interventions on work anxiety and subjective work ability perception are fruitful for restoring work ability and prevent dysfunctional courses of extended sick leave [41,42]. In this context, earlier research has shown that persons who underwent work ability trainings showed a higher degree of symptoms in the end of the training than controls, but were later or better integrated in work [43]. Work phobic anxiety and avoidance of work therefore should not be a reason to put these persons on sick leave, but rather to start confronting them with the feared stimulus work and train their capacities to cope with work-related problems [19,41,44,45].

Comparison of groups with different work ability courses

Our data show that persons who were unfit for work at intake and discharge (SS) are most severely affected by problems in all aspects: personal factors as well as workplace factors as

compared to persons who change from unfit to fit for work (SF). This is a hint that persons are judged unfit for work when they have a more severe overall state. This means that - although there are some key predictors (sick leave duration, work phobic anxiety, subjective work ability perception) - decision making on work ability must cover and integrate multiple aspects of personal and workplace factors. This fits to qualitative research that found multiple aspects taken into consideration in sick leave decisions, such as the biographical profile of the employee, the employer's perspective, the participants' perspective, the occupational therapist's perspective, the question of prognosis, i.e. whether declaring the employee as temporary or permanently incapacitated, and the employee's motivational state [10].

The finding that persons resting unfit for work (SS) are slightly older than those who become judged fit for work (SF) corresponds to other research which has shown the relationship between older age and stronger difficulties in return to work [17]. Especially in case of mood dysfunctions age seems of importance [46].

A relevant amount of persons discharged as fit for work after initial sick leave (SF) were unemployed at time of investigation. In some cases being unemployed may be a chance: instead of continuing sick leave at a specific (eventually anxiety-prone) workplace, a fit for work judgment for the general labour market may function as a driving factor: It signals the persons that s/he is able to work and may take a new start.

The importance of participants' and therapists' work ability perception becomes again obvious in the comparison of SF and FS persons. Both groups do not differ in cognitive performance, but FS have worse work ability ratings and higher general symptom load. The latter speaks for a higher general mental health impairment. This might be a reason for physicians' decision "unfit for work". This becomes even more significant as physicians' ratings for FS persons' work ability were lower than for SS persons' work ability. Furthermore, 58.7% of the

FS persons were not employed and therefore previously not confronted with a concrete workplace. Being unemployed reduces the necessity to search for a sick leave certification before inpatient treatment. Being unemployed also makes work phobic anxiety less relevant: there was no confrontation with the specific last workplace.

Graded return to work is a fruitful mean to facilitate return to work in persons who have been on sick leave for three months or longer [47]. In a relevant number of persons from the SS group graded return to work was initiated, which shows that physicians' decision of work ability considers a long-term perspective and includes positive prognosis expectations.

Data from this investigation show that work ability can be differentiated: Participants' and therapists make a difference between the level of *work ability for a concrete (i.e. the present/last) workplace* on the one hand, and on the other hand *general work ability*, i.e. work ability for any other job on the general the labour market. The level of specific work ability for the present/last workplace is perceived lower than the general work ability. To make the difference between general work ability and workplace-specific work ability is important in clinical practice, i.e. in clinical exploration: Exploring general work ability and specific workplace-directed work ability as two different aspects gains a more differentiated understanding of persons' work ability expectation. This is essential for successfully initiating return to work-oriented interventions [17]. The distinction can also be used when explaining the decision on work ability to the participant, because the participants are able to understand the difference between work ability for the last/present workplace and the general work ability.

Limitations

This investigation has been done in persons with mental disorders in a five-weeks inpatient treatment in Germany. This is a study with high ecological validity, but done

in a setting which is specialised for work-directed treatment and (work ability) diagnostics. It would be of interest how patients in general care, or in occupational medical settings, are investigated and evaluated concerning work ability. The question is, whether similar workplace and personal factors affect work ability decisions in occupational medicine settings.

Conclusion

Participants' subjective *negative work ability perception* and long previous *sick leave* duration were explanative for unfitness for work. But additionally, *high work phobic anxiety* was also a predictor for being discharged unfit for work. *General mental symptom load* and general *cognitive performance* in contrast was not significant.

Diagnostics in processes of evaluating and restoring mental work ability must be *work-specific* and go beyond general symptom load and general cognitive performance. Interventions may train work-specific capacities (e.g. to cope with work phobic anxiety) and improve subjective work ability perception. The aim must be to prevent dysfunctional long sick leave courses [48,41]. This can find its starting point in mental health diagnostic and treatment planning, simply by means of routinely considering *specific work-related mental health problems* (e.g. work-anxiety), work conditions [49], and work ability in diagnostics of patients with mental disorders.

References

1. Vornholt K, Villotti P, Corbière M, Muschalla B, Nijhuis FJN, Zijlstra FRH, Colella A. Disability and Employment. State of the Art and Future Outlook. *EJWOP*. 2018;27:40–55. doi: 10.1080/1359432X.2017.1387536
2. Bouville G, Dello Russo S, Truxillo D. The moderating role of age in the job characteristics–absenteeism relationship: A matter of occupational context? *JOOP*. 2018;91:57–83. doi: 10.1111/joop.12188
3. Rothermund E, Gündel H, Rottler E, Hölzer M, Mayer D, Rieger M, Kilian R. Effectiveness of psychotherapeutic consultation in the workplace: a controlled observational trial. *BMC Public Health*. 2016;16:891. doi: 10.1186/s12889-016-3567-y.
4. Sanderson K, Andrews G. Common mental disorders in the workforce: recent findings from descriptive and social epidemiology. *Can J Psychiat*. 2006;51:61–62.
5. Lidwall U, Bill S, Palmer E, Olsson Bohlin C. Mental disorders sick leave in Sweden: A population study. *Work*. 2018;59:259–272. doi: 10.3233/WOR-172672.
6. Greenberg PE, Sisitsky T, Kessler RC, Finkelstein SN, Berndt ER, Davidson JR. The economic burden of anxiety disorders in the 1990s. *J Clin Psychiat*. 1999;60:427–435.
7. Muschalla B. Different work capacity impairments in patients with different work-anxieties. *Int Arch Occup Environ Health*. 2016;89:609–619.
8. Nieuwenhuijsen K, Verbeek JH, de Boer AG, Blonk RW, van Dijk FJ. Predicting the duration of sickness absence for patients with common mental disorders in occupational health care. *Scand J Work Environ Health*. 2006;32:67–74.

9. Stansfeld SA, Clark C, Caldwell T, Rodgers B, Power C. Psychosocial work characteristics and anxiety and depressive disorders in midlife: the effects of prior psychological distress. *Occup Environ Med*. 2008;65:634–542. doi: 10.1136/oem.2007.036640.
10. Ramano E, Buys T, DeBeer M. Formulating a return-to-work decision for employees with major depressive disorders: occupational therapists' experiences. *Afr J Prim Health Care Fam Med*. 2016;20:e1–5. doi: 10.4102/phcfm.v8i2.954
11. WHO. *International Classification of Functioning, Disability and Health: ICF*. Geneva, World Health Organization, 2001.
12. BAuA. *Stressreport Deutschland 2012. Psychische Anforderungen, Ressourcen und Befinden*. Berlin, Bundesanstalt für Arbeitsschutz und Arbeitsmedizin, 2012.
13. OECD. *Sick on the Job? Myths and Realities about Mental Health and Work. Mental Health and Work*. OECD Publishing, 2012.
14. Muschalla B, Linden M. Workplace phobia, workplace problems, and work ability in primary care patients with chronic mental disorders. *J Am Board Fam Med*. 2014;27:486–494.
15. Harvey SB, Modini M, Joyce S, Milligan-Saville JS, Tan L, Mykletun A, Bryant RA, Christensen H, Mitchell PB. Can work make you mentally ill? A systematic meta-review of work-related risk factors for common mental health problems. *Occup Environ Med*. 2017;74:301–310. doi: 10.1136/oemed-2016-104015
16. Van den Berg TI, Elders LA, de Zwart BC, Burdorf A. The effects of work-related and individual factors on the Work Ability Index: a systematic review. *Occup Environ Med*. 2009;66:211–220. doi: 10.1136/oem.2008.039883.
17. Cornelius LR, van der Klink JJ, Groothoff JW, Brouwer S. Prognostic factors of long term disability due to mental disorders. A systematic review. *J Occup Rehabil*. 2011;21:259–274. doi: 10.1007/s10926-010-9261-5

18. Gatchel RJ, Polatin PB, Mayer TG, Garcy PD. Psychopathology and the rehabilitation of patients with chronic low back pain disability. *Arch Phys Med Rehabil.* 1994;75:666–670.
19. Linden M, Baron S, Muschalla B. Capacity according to ICF in relation to work related attitudes and performance in psychosomatic patients. *Psychopathology.* 2010;43:262–267.
20. Ihle A, Borella E, Rahnfeld M, Müller SR, Enge S, Hacker W, Wegge J, Oris M, Kliegel M. The role of cognitive resources for subjective work ability and health in nursing. *Eur J Ageing.* 2015;12: 131–140.
21. Schmidt FL, Hunter J. General mental ability in the world of work: occupational attainment and job performance. *J Pers Soc Psychol.* 2004;86:162–173.
22. Salgado JF, Anderson N, Moscoso S, Bertua C, de Fruyt F, Rolland JP. A meta-analytic study of general mental ability validity for different occupations in the European community. *J Appl Psychol.* 2003;88: 1068–1081.
23. Richardson K, Norgate SH. Does IQ Really Predict Job Performance? *Appl Dev Sci.* 2015;19:153–169.
24. Muschalla B, Linden M. Workplace Phobia – A first explorative study on its relation to established anxiety disorders, sick leave, and work-directed treatment. *Psychol Health Med.* 2009;14:591–605.
25. Macovei CM. Measuring job anxiety in military organization. *International Conference Knowledge-Based Organization.* 2016;22:451–456.
26. Mannor MJ, Wowak AJ, Bartkus VO, Gomez-Mejia LR. Heavy lies the crown? How job anxiety affects top executive decision making in gain and loss contexts. *Strategic Management Journal.* 2015;37:1968-1989.
27. Payne RL, Fineman S, Jackson PR. An interactionist approach to measuring anxiety at work. *J Occup Psychol.* 1982;55:13–25.
28. Smith ME: Work Phobia and sickness leave certificates. *Afr J Psychiat.* 2009;12:249–252.

29. De Vries G, Koeter MW, Nieuwenhuijsen K, Hees HL, Schene AH. Predictors of impaired work functioning in employees with major depression in remission. *J Affect Disord.* 2015;185:180-187.
30. Haines J, Williams CL, Carson JM. Workplace Phobia: Psychological and psychophysiological Mechanisms. *Int J Stress Manag.* 2002;9:129–145.
31. Kausto J, Pentti J, Oksanen T, Virta LJ, Virtanen M, Kivimäki M, Vahtera J. Length of sickness absence and sustained return to work in mental disorders and musculoskeletal diseases: a cohort study of public sector employees. *Scand J Work Environ Health.* 2017; pii: 3643. doi: 10.5271/sjweh.3643.
32. Franke G. *Symptom-Checklist of Derogatis – German Version.* Weinheim, Beltz, 1995.
33. ITB Institut für Test- und Begabungsforschung, Gittler G. *Intelligenz Struktur Analyse ISA. Ein Test zur Messung der Intelligenz. [Intelligence Structure Analysis].* Frankfurt, Swets, 2001.
34. WHO. *International Statistical Classification of Diseases and Related Health Problems, 10th revision.* Geneva, World Health Organization, 1992.
35. Broda M, Bürger W, Dinger-Broda A, Massing H. Die Berus-Studie. *Zur Ergebnisevaluation der Therapie psychosomatischer Störungen bei gewerblichen Arbeitnehmern.* Berlin, Westkreuz-Verlag, 1996.
36. DRV. *Quality report of the Rehabilitation Center Seehof.* Berlin, German Federal Pension Fund, 2009.
37. Schneider J, Michalak U. Probleme mit der Arbeitswelt – zunehmend ein Problem für Patienten? *DRV-Schriften.* 2007;72:240-241.
38. Huijs JJ, Koppes LL, Taris TW, Blonk RW. Differences in predictors of return to work among long-term sick-listed employees with different self-reported reasons for sick leave. *J Occup Rehabil.* 2012;22:301–311.

39. Sampere M, Gimeno D, Serra C, Plana M, López JC, Martínez JM, Delclos GL, Benavides FG. Return to work expectations of workers on long-term non-work-related sick leave. *J Occup Rehabil.* 2012; 22:15–26. doi: 10.1007/s10926-011-9313-5.
40. Muschalla B. Is it a case of “work-anxiety” when patients report bad workplace characteristics and low work ability? *J Occup Rehabil.* 2017;27:106–114.
41. Muschalla B, Linden M, Jöbges M. Work-Anxiety and Sickness Absence After a Short Inpatient Cognitive Behavioral Group Intervention in Comparison to a Recreational Group Meeting. *J Occup Environ Med.* 2016;58:398-406.
42. Nigatu YT, Liu Y, Uppal M, McKinney S, Gillis K, Rao S, Wang J. Prognostic factors for return to work of employees with common mental disorders: a meta-analysis of cohort studies. *Soc Psychiatr Psychiatr Epidemiol.* 2017;52:1205–1215. Doi: 10.1007/s00127-017-1402-0.
43. Koch S, Geissner E, Hillert A. Berufliche Behandlungseffekte in der stationären Psychosomatik. Der Beitrag einer berufsbezogenen Gruppentherapie im Zwölf-Monats-Verlauf. *Zeitschrift für Psychiatrie, Psychologie und Psychotherapie.* 2007;55:97–109.
44. Ahlgren A, Bergroth A, Ekholm J, Schüldt K. Work resumption after vocational rehabilitation: a follow-up two years after completed rehabilitation. *Work.* 2007;28:343-354.
45. Braathen TN, Veiersted KB, Heggenes J. Improved work ability and return to work following vocational multidisciplinary rehabilitation of subjects on long-term sick leave. *J Rehabil Med.* 2007;39:493-499.
46. Mattila-Holappa P, Ervasti J, Joensuu M, Ahola K, Pentti J, Oksanen T, Vahtera J, Kivimäki M, Virtanen M. Do predictors of return to work and recurrence of work disability due to mental disorders vary by age? A cohort study. *Scand J Public Health.* 2017;45:178–184. doi: 10.1177/1403494816686467

47. Streibelt M, Bürger W, Nieuwenhuijsen K, Bethge M. Effectiveness of Graded Return to Work after Multimodal Rehabilitation in Patients with Mental Disorder: A Propensity Score Analysis. *Occup Rehabil.* 2017;20:ahead of print. doi: 10.1007/s10926-017-9709-y.
48. Nash-Wright J. Dealing with anxiety disorders in the workplace: importance of early intervention when anxiety leads to absence from work. *Professional Case Management.* 2011;16:55–59.
49. Arnetz B, Blomkvist V. Leadership, mental health, and organizational efficacy in health care organizations. Psychosocial predictors of healthy organizational development based on prospective data from four different organizations. *Psychother Psychosom.* 2007;76:242–248.

Table 1. Predictive value of psychological status and persons' self-perceived work ability for work ability decision in the end of treatment (Logistic regression, listwise, Enter method, dependent variable: unfit for work at discharge)

<i>n</i> = 1544		
	Unfit for work	Sig <i>p</i>
<i>X</i> ² (df)	755.7 (11)	.000
Cox & Snell <i>R</i> ²	.378	
Nagelkerkes <i>R</i> ²	.519	
Predictors	Regr. Coeff. B	Sig <i>p</i>
Age	.006	.936
Sex	-.080	.266
Persons' work ability perception for last job ¹	-.718	.000
Persons' general work ability perception ¹	-.375	.001
Symptom load (SCL-90-R)	.059	.497
Workplace phobic anxiety (WPS)	.321	.000
Sick leave duration in past 12 months in weeks	.830	.000
Verbal cognitive performance (ISA)	-.027	.790
Numerical cognitive performance (ISA)	.123	.231
Figural spatial cognitive performance (ISA)	-.193	.036
Retention performance (ISA)	-.021	.793

Note: The whole sample covers *N* = 1570 persons in working age. Missing data were not replaced; 1544 cases with complete data in all relevant variables could be analysed in regression analysis. ¹Persons' work ability perception, but not therapist's work ability perception was included in the regression analysis, because therapist's work ability perception would have been confounded with the dependent variable unfitness for work.

Table 2. Comparison of persons with different courses of work ability status

	Fit for work at intake – fit for work at admission (FF) <i>n</i> = 630	Unfit for work at intake – fit for work at admission (SF) <i>n</i> = 243	Unfit for work at intake – unfit for work at admission (SS) <i>n</i> = 605	Fit for work at intake – unfit for work at admission (FS) <i>n</i> = 92	χ^2 -Test <i>p</i> -values
Sex female	445 (70.6%)	159 (65.4%)	419 (69.3%)	58 (63.0%)	.243
Applied for disability pension not applied	611 (96.9%)	211 (86.8%)	460 (76.0%)	56 (60.8%)	.000
planned	5 (0.8%)	6 (2.5%)	56 (9.3%)	6 (6.5%)	
applied	14 (2.2%)	26 (10.7%)	89 (14.7%)	30 (32.6%)	
Recommendation for aftercare	39 (6.1%)	12 (4.9%)	28 (4.6%)	3 (3.3%)	.498
Recommendation for vocational rehabilitation (following inpatient treatment)	8 (1.3%)	22 (9.1%)	47 (7.8%)	9 (9.8%)	.000
Stepwise reintegration following inpatient treatment	-	-	187 (30.9%)	18 (19.6%)	.000
Problems at work					.000
No workplace	109 (17.3%)	122 (50.6%)	164 (27.1%)	54 (58.7%)	
Workplace without problems	283 (44.9%)	30 (12.4%)	51 (8.4%)	11 (11.9%)	
Workplace with problems	237 (37.7%)	89 (36.9%)	390 (64.5%)	27 (29.3%)	
Type(s) of workplace problems (referring to those with workplace with problems, multiple answers allowed)					
Frequent or long absence	11 (4.6%)	17 (18.1%)	98 (25.1%)	4 (14.8%)	.000
Mobbing or conflicts	94 (39.5%)	37 (40.6%)	203 (51.9%)	10 (37.0%)	.009
Work amount (quantitative overload)	134 (56.3%)	49 (53.8%)	256 (65.5%)	15 (55.6%)	.051
Work task (qualitative overload)	45 (18.9%)	34 (37.4%)	187 (47.8%)	12 (44.4%)	.000
Structural problems (e.g. restructuring)	67 (28.2%)	19 (20.9%)	112 (28.7%)	3 (11.1%)	.115
MANOVA ¹					MANOVA Group comparison <i>p</i> -values
Age	47.58 (8.27)	45.90 (8.66)	48.20 (8.61)	46.42 (9.32)	FF-SF .054, FF-SS 1.000, FF-

Persons' work ability perception for last job	1.5 (0.68)	0.95 (0.82)	0.39 (0.59)	0.41 (0.65)	FS 1.000, SS-FS .379, SS-SF .002, FS-SF 1.000 FF-SF .000, FF-SS .000, FF-FS .000, SS-FS 1.000, SS-SF .000, FS-SF .000
Persons' general work ability perception	1.73 (0.54)	1.38 (0.72)	0.80 (0.79)	0.73 (0.83)	FF-SF .000, FF-SS .000, FF-FS .000, SS-FS 1.000, SS-SF .000, FS-SF .000
Symptom load (SCL-90-R)	0.97 (0.55)	1.13 (0.67)	1.44 (0.69)	1.51 (0.74)	FF-SF .006, FF-SS .000, FF-FS .000, SS-FS 1.000, SS-SF .000, FS-SF .000
Workplace phobic anxiety (WPS)	1.01 (0.92)	1.91 (1.26)	2.35 (1.17)	1.93 (1.19)	FF-SF .000, FF-SS .000, FF-FS .000, SS-FS .004, SS-SF .000, FS-SF 1.000
Sick leave duration in past 12 months in weeks	4.84 (7.30)	30.70 (16.73)	36.58 (14.42)	8.35 (13.48)	FF-SF .000, FF-SS .000, FF-FS .071, SS-FS .000, SS-SF .000, FS-SF .000
Therapist's rating of persons' work ability for last job	1.90 (0.33)	1.76 (0.52)	0.67 (0.79)	0.55 (0.75)	FF-SF .015, FF-SS .000, FF-FS .000, SS-FS .593, SS-SF .000, FS-SF .000
Therapist's rating of persons' general work ability	1.90 (0.29)	1.85 (0.35)	1.23 (0.82)	0.90 (0.85)	FF-SF 1.000, FF-SS .000, FF-FS .000, SS-FS .000, SS-SF .000, FS-SF .000
Verbal cognitive performance (ISA)	33.77 (9.13)	32.18 (9.41)	29.78 (9.98)	30.27 (11.32)	FF-SF .178, FF-SS .000, FF-FS .007, SS-FS 1.000, SS-SF .006, FS-SF .637
Numerical cognitive performance (ISA)	14.88 (6.08)	14.28 (6.27)	12.79 (6.41)	12.73 (6.44)	FF-SF 1.000, FF-SS .000, FF-FS .015, SS-FS 1.000, SS-SF .010, FS-SF .272
Figural spatial cognitive performance (ISA)	9.35 (4.93)	9.24 (4.87)	7.82 (4.59)	8.14 (4.02)	FF-SF 1.000, FF-SS .000, FF-FS .147, SS-FS 1.000, SS-SF .001, FS-SF .364
Retention performance (ISA)	5.65 (2.60)	5.58 (2.55)	4.88 (2.62)	4.68 (2.73)	FF-SF 1.000, FF-SS .000, FF-FS .006, SS-FS 1.000, SS-SF

Note: ¹MANOVA overall multivariate tests were significant at $p < .05$, thus Post-hoc tests between the subgroups are reported in the right column (p -values of e.g. SS-SF etc). Means (standard deviation) are reported in the other four rows. Due to missing values, n s of separate variables may vary between $n = 1544 - 1570$.